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THE BATTLEFIELD SKILL QUALIFICATION TEST: A PRELIMINARY FEASIBILITY ASSESSMENT

Thomas D. Scott and H. D. Young

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ARI FIELD UNIT AT PRESIDIO OF MONTEREY, CALIFORNIA



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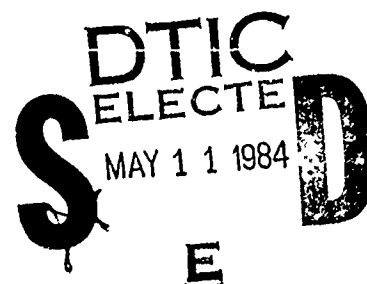
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of BSQT and normal SQT results indicated some significant differences in performances. Relative advantages and drawbacks of the BSQT and normal SQT are discussed.



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FOREWORD

The Presidio of Monterey Field Unit has a long history of successful applied behavioral research in unit training. The Tactical-Team-Performance Team carries out research and development on unit training and evaluation and has made major contributions to tactical engagement simulation systems and to the National Training Center.

The ability of the individual soldier to operate effectively on the modern battlefield is critically dependent on the quality of individual skill training and testing. In order to provide such high quality training, the Army has developed a standardized, performance-oriented system consisting of two basic components. The Soldier Manuals provide explicit training guidance. The Skill Qualification Test provides the mechanism for insuring that the training has been effective. However, many of the skills which will be required in battle are currently tested in non-tactical situations, and test results may therefore not accurately reflect soldiers' performance capabilities. In order to address this problem, the 25th Infantry Division developed a concept for conducting a Skill Qualification Test in a tactical environment, and ARI was asked to assist in its application and evaluation.

This report describes the results of research conducted to provide a feasibility evaluation of a tactically-based Skill Qualification Test concept for the 11B MOS soldier. The results indicated that the test is feasible in concept and probably does not require substantially more resources than does the normal Skill Qualification Test. Findings also strongly suggest that current testing methods may yield results not indicative of 11B soldiers' actual performance capabilities. The results have implications for the Army Training Board (ATB) and the Infantry School (USAIS) for the improvement of individual skill tests and testing methodology.

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EXECUTIVE SUMMARY

Requirement:

To evaluate the feasibility of a tactically administered Skill Qualification Test (SQT).

Procedure:

The Battlefield Skill Qualification Test (BSQT) evaluation exercise was conducted in August 1981 and incorporated all 19 of the 1981 Hands-On and written "Skill Component" tasks for the 11B MOS soldier. Each task was incorporated into a battlefield scenario built around an Infantry Rifle Company conducting a deliberate defense in a mid-intensity war. The scenario used in this study, however, can be easily adapted to fit available training areas and resources and all tasks can be incorporated into a variety of infantry missions (e.g., patrol, defense, etc.). Tested soldiers moved through the BSQT course in groups of three and it took each group a little less than 1 1/2 hours to complete the course.

Findings:

Results indicated that the BSQT is feasible in concept, and is not substantially more resource intensive than the normal SQT. Comparisons of normal SQT and BSQT scores revealed some important discrepancies, mainly between SQT "Skill Component" items and the corresponding BSQT conversions. The differences suggest that in some cases normal SQT scores may not accurately measure soldiers' performance capabilities.

Utilization of Findings:

Results suggest that current SQT tests and testing methodology need to be reviewed for consistency with Army training goals, philosophy and policies. The findings have direct implications for the Army Training Board (ATB) and the Infantry School (USAIS) for the improvement of the SQT and the methods by which the SQT is administered. Other service schools (e.g., USAARMS) will find these results useful in reviewing their individual skill training and testing programs.

THE BATTLEFIELD SKILL QUALIFICATION TEST: A PRELIMINARY FEASIBILITY ASSESSMENT

CONTENTS

| | <u>Page</u> |
|--|-------------|
| INTRODUCTION | 1 |
| METHOD | 3 |
| Personnel | 3 |
| Scenario | 4 |
| Resources | 8 |
| RESULTS | 9 |
| General | 9 |
| Battlefield SQT Results | 11 |
| Battlefield SQT Questionnaire | 16 |
| SQT Resource Requirements | 17 |
| Major Conclusions | 19 |
| APPENDIX A. Battlefield SQT Scenario | 21 |
| B. Personnel Requirements | 27 |
| C. Equipment Requirements | 33 |

LIST OF TABLES

| | |
|--|----|
| Table 1. Task list | 6 |
| 2. Battlefield SQT task requirements | 10 |
| 3. Percentages of NO GO responses on SC (converted) BSQT and normal SC SQT test scorable units | 11 |
| 4. Mean number of scorable units incorrect (NO GO) for BSQT and normal SQT for converted SC items and written SC, respectively, and for hands-on component (HOC) items | 13 |
| 5. Percentages of NO GO responses to selected BSQT and normal SQT hands-on test scorable units | 14 |
| 6. Mean number of NO GO test scorable units for BSQT and normal SQT for all hands-on component scorable units (all) and for the 10 items (selected items) presented in Table 7 | 15 |

CONTENTS (Continued)

| | <u>Page</u> |
|---|-------------|
| Table 7. Percentages of NO GO responses to selected BSQT and SQT scorable units | 15 |
| 8. Soldiers' responses to the battlefield SQT questionnaire | 16 |
| 9. BSQT and normal SQT personnel requirements | 18 |

LIST OF FIGURES

| | |
|--|---|
| Figure 1. Battlefield SQT site configuration | 5 |
|--|---|

THE BATTLEFIELD SKILL QUALIFICATION TEST: A PRELIMINARY FEASIBILITY ASSESSMENT

INTRODUCTION

The primary vehicles for individual skill training and testing are the Soldiers Manual and the Skill Qualification Test (SQT), respectively. These documents specify in detail the tasks, conditions and standards for the essential skills soldiers need to master. A central theme of this report is that the conditions under which tasks are performed play an important role in determining how well individual skill training and testing goals are met. These goals focus on providing the soldier with the ability to operate effectively on the battlefield. This implies that training and testing conditions need to be as tactically realistic as possible. Unfortunately, however, the SQT is rarely administered under tactical conditions and is therefore not fully consistent with training and testing goals or with the Army's accepted performance-oriented training philosophy.

One of the major weaknesses of the current SQT is that it calls for testing soldiers in nontactical "parade ground" environments, and, still worse, in classrooms. Unlike the ARTEP which trains and evaluates unit skills in the realistic tactical environments, until now soldiers have been tested in an environment far removed from that in which they are expected to perform in combat. Thus, a reevaluation of the current SQT concept is in order.

A second weakness in the current SQT is that the written component, somewhat misleadingly called the SQT "Skill Component" (SC), may be too heavily dependent on soldier's literacy skills. Combat arms units have a substantial percentage of category IV and V soldiers. These soldiers, while having the capability to perform quite well, are often at a severe disadvantage in taking written tests. It is likely that current SC SQT are yielding results that underestimate soldier's true capabilities. These two weaknesses led to a search for better ways to conduct individual skill testing. The result of that effort was the Battlefield Skill Qualification Test (BSQT). The central concept of the BSQT was to change the test conditions to reflect a realistic tactical environment while, in so far as possible, leaving the tasks and standards intact.

The BSQT consolidates the Hands-On Component (HOC) and the written SC of the current SQT test into one operation. Although only the 11B Military Occupational Specialty (MOS) is used in this study, the BSQT concept could apply to many MOSs. Battlefield SQT is performance-oriented testing to complement already established performance-oriented training. To maximize the effectiveness of limited resources and time, it is essential that soldier's training be conducted and evaluated in a combat environment. Battlefield SQT is a move in that direction; it

gives credibility to Army individual training and testing practices and enhances the substance of Army training philosophy.

During the late summer of 1981, the 2d Bde of the 25th Infantry Division, with assistance from the U. S. Army Research Institute, conducted a feasibility study of the BSQT. The remainder of this report documents the methods and results of that study and compares the BSQT results with the current SQT test results.

METHOD

Personnel

Evaluated Soldiers: The evaluated troops consisted of 79 soldiers from three platoons of the 2d Brigade, 25th Infantry Division. Soldiers were E-1 through E-4 and had taken the current Skill Qualification Hands-On / and written "Skill Component" Tests within the preceding month. However, data from only 58 soldiers were used in the analyses of the normal SQT and the BSQT results, as normal SQT results were not available on the 19 remaining soldiers.

Controllers/Evaluators: Battlefield SQT controller/evaluator staff consisted of one officer and fourteen NCO evaluators. The NCO evaluators were well trained and had been evaluators for the Hands-on Component of the normal SQT. After the normal SQT test cycle ended, they were assigned as evaluators for the Battlefield SQT project. Evaluators graded the same task on Battlefield SQT as they had on the normal SQT. Therefore, only the five written "Skill Component" tasks had to be taught to the evaluators.

Evaluators were allocated to positions in the battlefield scenario as follows:

Phase 1 - Contact Patrol Phase

- a. Two NCO controllers served as patrol leaders, evaluated visual signals and guided the patrol throughout Phase 1 which took approximately 25 minutes to complete.
- b. Three evaluators were assigned to a 4.2 inch mortar site and graded soldiers on three NBC tasks.
- c. One evaluator was assigned to a danger area where soldiers were required to move over or around obstacles.

Phase 2 - Platoon Defensive Phase

- a. One controller served as the platoon sergeant for the platoon in the defense and guided soldiers, arriving from Phase 1, to three defensive positions within his platoon sector.
- b. Two evaluators were assigned to a defensive position, with an armor avenue of approach, and evaluated the use of light anti-tank weapons.
- c. Two evaluators were assigned to a defensive position, where enemy probing was imminent, and evaluated soldiers on M-60 machinegun and Claymore mine tasks.

d. Three evaluators were assigned to the platoon headquarter defensive position and graded soldiers on emergency medical tasks.

Phase 3 - Company Command Post Phase

a. One controller served as the company operations sergeant and assigned the three soldiers tasks to be performed within the company command post (C.P.).

b. One evaluator served as the company commo sergeant and graded the soldiers on installing a field telephone and M-16 rifle operator maintenance.

c. One evaluator within the company C.P. graded soldiers on map reading skills.

d. One evaluator served as an NCO in charge of a detail assigned to clear an old enemy mine field and graded soldiers on locating a mine and installing an anti-tank mine.

OPFOR: OPFOR players were used in two areas of the battlefield scenario. One OPFOR soldier was used as a sniper in Phase 1 (contact patrol phase) as part of the task Move Over and Around Obstacles. An OPFOR squad was used in Phase 2 (platoon defense phase) as a reconnaissance patrol probing the platoon defensive sector.

Support Personnel: The following support personnel were used in the Battlefield SQT study:

a. Two soldiers were used to pick up and compile data from soldiers' score sheets.

b. One E-6 commo chief and an assistant were used to set up wire telephone communication between administrative sites and each of the phase sites.

A detailed breakdown of personnel requirements is provided in Appendix B.

Scenario

The scenario consisted of three phases: Contact Patrol, Platoon Defense, and Company Command Post. Within each phase, 5 to 7 BSQT tasks were evaluated. A schematic diagram of the site configuration and allocation of tasks to positions in each phase is provided in Figure 1 and the accompanying task list on the following page (Table 1).

Phase 1: Upon arrival at the BSQT site, the tested soldiers first moved from the in-briefing area to a platoon assembly area where they camouflaged themselves and their equipment. Once this had been completed,

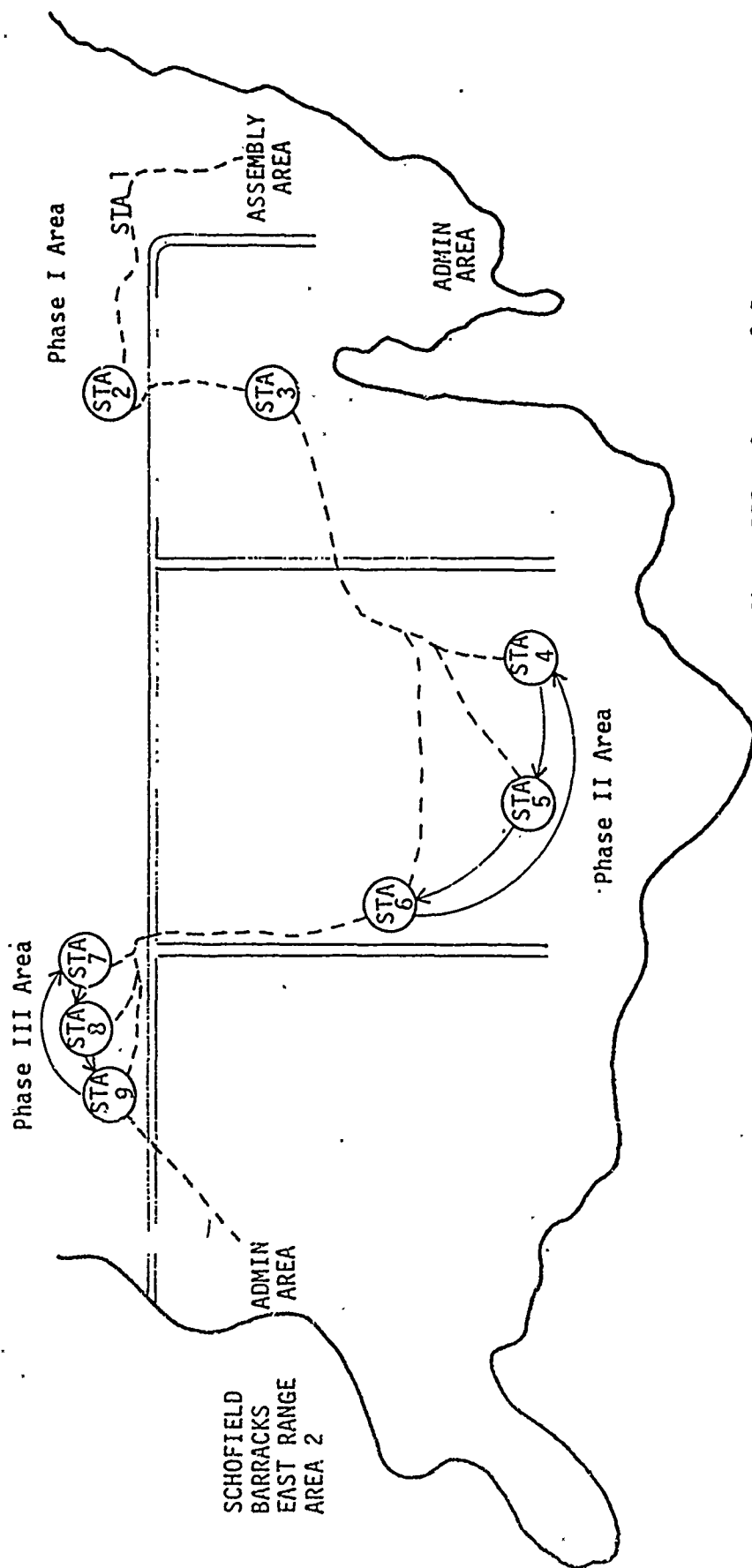


Figure 1 - Battlefield SQT Site Configuration

Table 1
Task List

Phase 1 - Contact Patrol Phase

- Task 1 - Demonstrate Visual Signals
- Task 2 - Put on a Protective Mask
- Task 3 - Administer Blood Agent Antidote
- Task 4 - Decontaminate Self
- Task 5 - Move Around and Over Obstacles

Phase 2 - Platoon Defense Phase

- Task 6 - Operate an M-60 Machinegun
- Task 7 - Prepare a DRAGON for Firing
- Task 8 - Demonstrate DRAGON Firing Position
- Task 9 - Prepare an M-72A2 LAW for Firing
- Task 10 - First Aid for Bleeding Wound/Treat for Shock
- Task 11 - Mouth-to-Mouth Resuscitation/Artificial Heart Massage
- Task 12 - Install and Fire the Claymore Mine

Phase 3 - Company Command Post Phase

- Task 13 - Install TA-312
 - Task 14 - Perform Operator Maintenance on M-16
 - Task 15 - Locate Mines by Probing
 - Task 16 - Install M-21 Metallic Anti-Tank Mine
 - Task 17 - Determine a Location by Grid Coordinates
 - Task 18 - Determine a Magnetic Azimuth
 - Task 19 - Determine an Azimuth by Using a Coordinate Scale and Protractor
-

three soldiers moved forward, under supervision of an NCO evaluator/patrol leader, to conduct a short "Contact Patrol" between the battalion combat trains and the flank platoon of an adjacent rifle company. As the soldiers moved, the NCO evaluator tested the soldiers on their ability to accurately perform five visual signals. Further down the route of movement, the patrol came upon a 4.2 inch mortar section suffering from a chemical attack. Each soldier was assigned a different temporary battle position. In the area of each soldier's position, he found a soldier who was wearing a protective mask and suffering from blood agent poisoning. Each tested soldier was required to perform three tasks: Put on the Protective Mask, Administer Blood Agent Antidote, and Personal Decontamination. After these tasks had been completed, the soldiers returned to the patrol leader and the patrol continued. Next, the patrol came upon a danger area which contained several old enemy obstacles that included concertina wire, barbed wire and log walls. The soldiers had to Move Through, Over and Around Obstacles as they maneuvered through the area using combat movement techniques. Once the soldiers were through the danger area, they set up security positions on the other side of the danger area.

Phase 2: When all soldiers had moved through the danger area, the patrol reformed and moved on toward the flank of the company. Shortly thereafter, the patrol encountered the company security positions and the patrol leader released the soldiers to the platoon sergeant/controller. The platoon sergeant directed each soldier to one of three positions where they were turned over to a squad leader/evaluator. Soldiers were required to perform seven BSQT tasks at the three positions and each soldier rotated through the positions until all seven tasks had been performed. The tasks evaluated at the three defensive positions were: Position one--Prepare DRAGON for Firing, Demonstrate Correct DRAGON Firing Position and Prepare the LAW for Firing; Position two--Install and Fire the Claymore Mine, and Operate the M-60 Machinegun; Position three--Mouth-to-Mouth Resuscitation With External Heart Massage, and Stop the Bleeding and Treat for Shock. After the soldiers had moved through all three positions, they were reassembled and given a message for the company commander at the Company C.P. The three soldiers then moved to the Company C.P. where they were met by the company operations NCO/controller.

Phase 3: The operations NCO directed the soldiers to three different positions within the Company C.P. area where they were required to perform seven BSQT tasks. Soldiers rotated through all three positions. The BSQT tasks to be performed at the Company C.P. were: Position one--Install TA-312 and Operators Maintenance on the M-16 Rifle; Position two--Determine Location Using Grid Coordinates, Determine Azimuth Using Protractor and Coordinate Scale, and Determine Magnetic Azimuth; Position three--Locate Mines by Probing, and Install the M-21 Anti-Tank Mine. After the three soldiers had completed all seven tasks, they were reassembled and sent to the end holding area where score sheets were compiled and a BSQT questionnaire was administered.

The BSQT test was built around a battlefield setting and the conditions were made as realistic as possible. The details of the scenario including evaluator briefings is described in Appendix A.

Resources

Time: Planning and preparation for the BSQT, including site preparation and preparation of score sheets and questionnaires, was accomplished in less than three days. With some experience, however, this time could probably be cut to about 1 1/2 days. Personnel required for the preparation were the O.I.C., a senior NCO, and a few enlisted men needed to prepare the danger area and the dug-in positions for Phase II tasks.

As noted earlier, soldiers moved through the course in groups of three. It took each group a little less than 1 1/2 hours to complete the entire course. Groups started the course at intervals of about 20-25 minutes. Thus, a 30-man platoon could be tested on the BSQT course in 4 1/2 to 6 hours. Two platoons could be tested on a single day, and a company could be tested in 1 1/2 days.

Other Resources: Resource requirements were similar to those required for any tactical exercises. A detailed description of the equipment used in the BSQT test is contained in Appendix C.

RESULTS

General

The results of the demonstration Battlefield SQT (BSQT) indicated that the concept is feasible for active component units which have access to suitable terrain for small unit tactical training. The terrain requirements are not excessive and a full BSQT requires about the same amount of terrain as a normal dismounted infantry squad exercise. More importantly, however, adoption of an IIB BSQT option would have three important advantages over the current SQT methods. First, the BSQT is thoroughly performance-oriented and is thus more consistent with the Army's training philosophy and methods. As will be discussed in a subsequent section, an important finding of this project was that soldiers who passed some current SQT items in the normal situation were often not able to actually perform these tasks satisfactorily in a tactical mission context. This finding suggests that perhaps the current individual skill testing concept is inappropriate. The key purpose of individual skill testing is to insure that soldiers possess the skills to fight and survive on the battlefield. To the extent to which individual skill tests do not accurately measure soldiers' performance capabilities in tactical mission contexts, the validity of these tests must be seriously questioned. Since soldiers are expected to employ individual skills in tactical missions, they should therefore be tested in that context. Thoroughly performance-oriented training should lead to thoroughly performance-oriented testing. The key to the BSQT concept is that soldiers' skills are tested in a context as similar as possible to the one in which they are expected to use these skills.

A second related advantage is that BSQTs, executed in a tactical mission context, can easily be integrated with other types of small unit tactical training. For example, while moving between BSQT stations, soldiers have the opportunity to practice security procedures, movement techniques, selection of temporary fighting positions, etc. Thus, the BSQT provides an important training opportunity while at the same time satisfying individual skill testing requirements. In this regard, the BSQT can be a more effective use of a unit's training resources.

A third advantage of the BSQT concept is that it places less emphasis on soldiers' literacy skills than does the current SQT. One drawback of the written "Skill Component" (SC) of the current SQT is that soldiers' knowledge of task performance requirements is confounded with their level of literacy and written test taking skills. Twenty percent of the soldiers in the BSQT project reported having problems with the written SC of the current SQT. The SQT is not the appropriate vehicle for testing soldiers' literacy skills, nor should SQT be oriented

Table 2. Battlefield SQT Task Requirements
(Normal SQT source is indicated in parentheses following each item.)

Phase 1 - Contact Patrol Phase

- Task 1 - Demonstrate Visual Signals (HOC)
- Task 2 - Put on a Protective Mask (HOC)
- Task 3 - Administer Blood Agent Antidote (SC)
- Task 4 - Decontaminate Self (HOC)
- Task 5 - Move Around and Over Obstacles (SC)

Phase 2 - Platoon Defense Phase

- Task 6 - Operate an M-60 machinegun (HOC)
- Task 7 - Prepare a DRAGON for Firing (HOC)
- Task 8 - Demonstrate DRAGON Firing Position (HOC)
- Task 9 - Prepare an M-72A2 LAW for Firing (HOC)
- Task 10 - First Aid for Bleeding Wound/Treat for Shock (HOC)
- Task 11 - Mouth-to-Mouth Resuscitation/Artificial Heart Massage (SC)
- Task 12 - Install and Fire the Claymore Mine (HOC)

Phase 3 - Company Command Post Phase

- Task 13 - Install TA-312 (HOC)
 - Task 14 - Perform Operator Maintenance on M-16 (HOC)
 - Task 15 - Locate Mines by Probing (HOC)
 - Task 16 - Install M-21 Metallic Anti-Tank Mine (HOC)
 - Task 17 - Determine a Location by Grid Coordinates (SC)
 - Task 18 - Determine a Magnetic Azimuth (HOC)
 - Task 19 - Determine an Azimuth by Using a Coordinate Scale and Protractor (SC)
-

toward testing knowledge of performance requirements. Rather, the SQT should test soldiers' ability to perform; this is precisely what the current SQT written SC does not do. The BSQT concept offers a feasible alternative to these individual skill testing problems.

Battlefield SQT Results

Skill Component (SC). The Battlefield SQT consisted of a total of 19 scorable units (Table 2). Five of these were converted from the written SC items to hands-on items. Soldiers tended to fail these converted items more than three times as often as the remaining hands-on test items (Table 4). The five converted scorable units accounted for 55% of the errors made on the entire BSQT. Because of the unusually high error rate, these tasks are analyzed in detail below (Table 3).

Table 3. Percentages of NO GO responses on SC (converted) BSQT and normal SC SQT test scorable units. Percentages listed are for those soldiers who took both BSQT and normal SQT (N=58).
**Item not administered (see text).

| TASK: | 3 | 5* | 11* | 17* | 19* |
|---------------------|----|----|-----|-----|-----|
| BSQT (converted SC) | 43 | 33 | 90 | 14 | 22 |
| Normal SQT (SC) | ** | 9 | 10 | 50 | 52 |

*p<.01 (Cochran Q)

- Task 3 Administer Blood Agent Antidote
- 5 Move Over and Around Obstacles
- 11 Mouth-to-Mouth Resuscitation and Artificial Heart Massage
- 17 Determine Location by Grid Coordinates
- 19 Determine Azimuth Using Coordinate Scale and Protractor

Task 11 (Mouth-to-Mouth Resuscitation and Artificial Heart Massage) was the most frequently missed scorable unit in the BSQT, and accounted for 44% of the items missed on the converted part of the BSQT. Ninety percent of the soldiers tested missed the item. Review of the score sheets, together with interviews of the evaluators, revealed no problem with the test item task statement, conditions or standards. Soldiers were simply not able to perform the task satisfactorily. It is important to note that on their recently completed Skill Component SQT, only 10% of the soldiers had missed this item (Table 3). The difference between the scores on the two tests was significant at the p<.01 level (Cochran Q). Thus, these soldiers' written SC SQT scores probably did not accurately

reflect their performance capabilities. Training and testing materials for this task require reexamination regardless of whether or not a BSQT is adopted.

Task 3 (Administer Blood Agent Antidote) was the second most frequently missed scorable unit (Table 3). Forty-three percent of the soldiers missed this BSQT item. Although this item was on the SQT notice, it was subsequently withdrawn by TRADOC pending reevaluation. As a result, few soldiers received training on the administration methods and, not surprisingly, scored poorly on the item.

Task 5 (Move Around and Over Obstacles) was also a frequently missed scorable unit (Table 3). Thirty-three percent of the tested soldiers missed this BSQT Item. Further investigation suggested that as in Task 11, most soldiers missed this item due to the lack of mastery of basic skills. For those soldiers who took both tests (the normal SQT and the BSQT), significantly fewer items were missed ($p < .01$; Cochran Q) on the written SC of the normal SQT (9%). Again, these results suggest that examination of training and test materials are needed regardless of whether or not a BSQT format is adopted. Moreover, it is questionable whether tactical movement techniques can be adequately tested in a written format.

On the remaining two converted scorable units (Task 17: Determine Location by Grid Coordinate, and Task 19: Determine Azimuth Using Coordinate Scale and Protractor), soldiers tended to do significantly better on the BSQT than on normal SQT (Table 3). Comparing those soldiers who took both tests, 14% and 50% missed Task 17 for the BSQT and normal SQT, respectively ($p < .01$; Cochran Q). The results were similar for Task 19: 22% and 52% missed the item on the BSQT and normal SQT, respectively ($p < .01$; Cochran Q). While it is not entirely clear why there was a substantial difference between the two tests' results, two possibilities are likely. First, soldiers may have received some task-specific training following their normal SQT and prior to taking the BSQT. This would tend to decrease the error frequency on the BSQT. Secondly, some soldiers may have had difficulty understanding the written SC items. Twenty percent of the soldiers who responded to the BSQT questionnaire indicated that they had problems with the SQT written SC.

In summary, comparison of normal SQT and BSQT results for SC scorable units shows substantial differences on each of the four items common to both tests. On two of these (Tasks 5 and 11), many soldiers could not perform the tasks even though they had passed the parallel SQT written SC items. This strongly suggests fundamental problems with the current individual skill training materials, the current SQT, or both. On the two remaining items common to both tests (Tasks 17 and 19), soldiers tended to score significantly better on the BSQT than on the normal SQT. Intervening training between the two tests and problems with literacy skills may account for the differences. It is also

possible of course that the SC conversion may have accounted for some of the discrepancies between the BSQT and normal SQT scores. This is somewhat unlikely, however, as the standards were taken from the SQT-SC with minimal changes. It is more likely that soldiers who passed the normal SQT-SC were not able to apply their knowledge to the BSQT tasks.

Hands-On Component (HOC). Of the 19 BSQT tasks, 14 were HOC items (Table 2). On the whole, soldiers tended to perform relatively better on these BSQT tasks than on the converted SC items. Soldiers were over three times as likely to miss BSQT converted SC items as they were the HOC items (Table 4). Results were similar for the normal SQT: more SC than HOC items were missed.

Table 4. Mean number of scorable units incorrect (NO GO) for BSQT and normal SQT for converted SC items and written SC, respectively, and for Hands-On Component (HOC) items. Item 3 (Administer Blood Agent Antidote) was deleted as it was not common to both tests.

| Type Item | HOC (N=14) | SC (N=4) |
|------------|---------------|-------------|
| BSQT | 6.9 | 23.0 |
| Normal SQT | 5.1 | 17.5 |

Within the hands-on items, error frequencies on four items were substantially different on the BSQT and the normal SQT (Table 5). Task 2 (Put on Protective Mask) scores showed that 45% of the soldiers missed the scorable unit on the BSQT while only 5% missed the parallel normal SQT item ($p < .01$; Cochran Q). Interviews with the SQT evaluators indicated that soldiers had insufficient time to complete the task under the current SQT standard. It will be recalled that soldiers in the BSQT were dressed tactically and carrying their weapons. The 15 seconds normally allocated for the task was not sufficient to permit soldiers to lay down their weapon, rearrange their clothing and then to remove and put on their protective masks. In addition, while in a normal SQT soldiers have ample time and situational cues to prepare to execute the tasks, in the BSQT the requirement to perform the task was not expected: the evaluator simply said "Gas!". These factors make the execution of the tasks more combat realistic but also require more time for soldiers to grasp the implication of the cue, to prepare and to execute the task. An additional 5-10 seconds probably will be required to execute this task in a tactical context.

Table 5. Percentages of NO GO responses to selected BSQT and normal SQT hands-on test scorable units. Percentages listed are those soldiers who took both BSQT and the normal SQT (N=58).

| TASK: | 2* | 7 | 15* | 16* |
|------------|----|----|-----|-----|
| BSQT | 45 | 26 | 19 | 2 |
| Normal SQT | 5 | 10 | 3 | 29 |

*p<.01 (Cochran Q)

- Task 2 Put on Protective Mask
- 7 Prepare a DRAGON for Firing
- 15 Locate Mines by Probing
- 16 Install M-21 Metallic Anti-Tank Mine

Task 15 (Locate Mines by Probing) scores showed that 19% of the soldiers missed the BSQT item compared with 3% on the normal SQT (p<.01; Cochran Q; Table 5). Interviews with BSQT personnel and review of the score sheets revealed that most of the soldiers that missed this item did so because they failed to have their sleeves rolled up while checking for trip wires prior to probing for the mine. Further, during their recent SQT, most soldiers had their sleeves rolled up before starting the task. Thus, the normal SQT failed to adequately test all the activities required in this task. Here, the BSQT results, by virtue of being conducted in a tactical context, revealed a performance deficit which would have otherwise gone unnoticed. The results of this BSQT item also suggest the somewhat subtle influence that apparently minor differences in conditions at the start of a task can have on test results. This finding argues in favor of conducting individual skill testing under as tactical conditions as possible.

The third scorable unit on which there was significant difference between the two tests was Task 16 (Install the M-21 Metallic Anti-Tank Mine). On this item, only one soldier (2%) missed the BSQT item compared to 29% who missed the parallel SQT item (p<.01; Cochran Q; Table 5). Again, it is not clear why the improvement between the two tests, but intervening training seems a plausible explanation.

Finally, on Task 7 (Prepare the DRAGON for Firing), 26% missed the BSQT scorable unit compared to 10% for the normal SQT (Table 5). Although the difference between the two tests' results was not statistically significant, interviews with evaluators indicated that time (30 seconds in the normal SQT) was a problem as soldiers had to take off their helmet and dispose of their weapon before starting the task. An additional 10-15 seconds may be required to execute this in a tactical context.

The results on the remaining 10 hands-on scorable units (Tables 6 and 7) showed no large differences between the results of the two tests. On both BSQT and the normal SQT, soldiers missed an average of 7% of these items. Finally, the lack of any significant correlation between soldiers' scores on the two tests ($r=.04$) suggests that there were some basic differences between the BSQT and normal SQT. This is, of course, hardly surprising as the former was designed to be more performance-oriented than the latter test.

Table 6. Mean number of NO GO test scorable units for BSQT and normal SQT for all Hands-On Component scorable units (All) and for the 10 items (Selected Items) presented in Table 7. These were items 1, 4, 6, 8, 9, 10, 12, 13, 14, and 18.

| HOC Items | All N=14 | Selected Items N=10 |
|--------------|-------------|------------------------|
| BSQT | 6.9 | 4.3 |
| Normal SQT | 5.1 | 4.3 |

Table 7. Percentages of NO GO responses to selected BSQT and SQT scorable units. For convenience, the scorable unit titles are listed in the bottom part of the table. Percentages listed are for those soldiers who took both BSQT and normal SQT (N=58). None of the differences were significant at the $p<.01$ level (Cochran Q).

| TASK: | 1 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 18 |
|------------|----|----|---|---|----|----|----|----|----|----|
| BSQT | 5 | 14 | 7 | 2 | 3 | 29 | 10 | 0 | 0 | 3 |
| Normal SQT | 12 | 3 | 7 | 5 | 10 | 21 | 14 | 0 | 2 | 0 |

- Task 1 Demonstrate Visual Signals
 4 Decontaminate Self
 6 Operate an M-60 Machinegun
 8 Demonstrate DRAGON Firing Position
 9 Prepare an M-72A2 LAW for Firing
 10 First Aid for Bleeding Wound/Treat for Shock
 12 Install and Fire the Claymore Mine
 13 Install TA-312
 14 Perform Operator Maintenance on M-16
 18 Determine a Magnetic Azimuth

Battlefield SQT Questionnaire

Following completion of the BSQT, soldiers were asked to complete a brief 5-item questionnaire. Most of the items asked soldiers to compare the BSQT with the normal SQT.

Table 8. Soldiers' Responses to the Battlefield SQT Questionnaire

| | <u>% (N=68)</u> |
|--|-----------------|
| 1. The Battlefield SQT was: | |
| a. More difficult than the current SQT | 73 |
| b. About the same difficulty as the current SQT | 22 |
| c. Easier than the current SQT | 5 |
| 2. Which type of SQT better evaluates your capabilities? | |
| a. The Battlefield SQT | 73 |
| b. The current SQT | 27 |
| 3. Which type of SQT is more fair? | |
| a. The Battlefield SQT was more fair. | 31 |
| b. The current SQT is more fair. | 21 |
| c. Both SQTs are about equally fair. | 44 |
| 4. Which kind of SQT would you rather take? | |
| a. I would prefer to take the current SQT. | 43 |
| b. I would prefer to take the Battlefield SQT. | 57 |
| 5. Do you have any problems with the written portion of the current SQT? | |
| Yes | 20 |
| No | 80 |

On the whole, soldiers responded favorably to the BSQT (Table 8). Of the 68 respondents, 57% indicated they would rather take the BSQT compared to 43% who indicated a preference for the normal SQT. More importantly, 73% indicated their belief that the BSQT better evaluated their capabilities. An implication inherent in these data is that a considerable number of soldiers who reported that the BSQT was a better evaluation method also preferred to take the normal SQT over the BSQT. Indeed, 41% of the soldiers expressing a preference for the normal SQT indicated that the BSQT better evaluated their capabilities. These data indicate that accuracy of the evaluation was not seen as a major drawback among those who preferred the normal SQT.

Soldiers consistently indicated that the BSQT was more difficult (73%) than the normal SQT (Table 8). Only 5% indicated that the BSQT was easier than the normal SQT. It is somewhat surprising that even though it was seen as a more difficult test, most soldiers preferred the BSQT over the normal SQT. One might suggest that soldiers saw the increased level of difficulty as a challenge rather than as a drawback.

Item 3, which asked respondents about the "fairness" of the two SQT tests, revealed no pattern of consequence. Forty-four percent thought the BSQT was more fair compared to 31% for the normal SQT. The remaining 21 percent thought that both tests were about equally fair.

The final item asked soldiers if they had "any problems with the written portion of the current SQT." Twenty percent (N=13) responded affirmatively. Not at all surprisingly, all of these indicated that the BSQT better evaluated their capabilities, 85% preferred the BSQT over the normal SQT, and 69% thought the BSQT was a more fair test. In addition, these data are consistent with data from the normal SQT which indicated that soldiers tended to miss written SC items more frequently than Hands-On Component items. Together these data strongly suggest that the written SC of the current SQT be reevaluated.

Battlefield SQT Resource Requirements

Personnel: The personnel required to conduct the BSQT was less than that required for the normal SQT (Table 9). However, only two platoons could be tested per day in the BSQT compared to four tested in the normal SQT. There is, of course, a trade-off between the number of personnel required and the time constraints. If, for example, one desired to test twice the number of troops in the same amount of time, a proportionately larger number of test support personnel is required. In the present case, the BSQT required 29 enlisted personnel for two platoons and would probably have required about 58 to test four platoons. Although fifty-six enlisted personnel are needed to conduct the normal SQT, this figure does not take into account the lesser number of tasks (N=14) tested in the normal HOC of the SQT nor the personnel used to administer the SC of the normal SQT. These figures indicate, then, that the overall personnel requirements for the BSQT and the normal SQT are not substantially different.

Table 9. BSQT and Normal SQT Personnel Requirements

| | Battlefield SQT | Normal SQT* |
|--------------------------|-----------------|-------------|
| Officers | 1 | 1 |
| E-6 or above | 12 | 30 |
| E-5 | 2 | 2 |
| E-4 or below | 4 | 16 |
| Administrative Personnel | 4 | 8 |
| OPFOR | <u>7</u> | <u>--</u> |
| Total Enlisted | 29 | 56 |

*Personnel administering SC of normal SQT excluded.

Terrain: The terrain requirements for the BSQT were not excessive. The area used, approximately 150 meters by 1500 meters, is about the size required for a normal squad tactical exercise. However, it is recognized that some units, especially reserve component units, may not have easy access to suitable terrain. One compromise may be to develop the BSQT as an option for those units normally having access to adequate training areas. While this may pose some standardization problems, it should be remembered that the goal is to train and test soldiers so that they can fight and survive on the battlefield, not only to develop a rigorously standardized test. Some testing error can be tolerated as long as training and testing methods are generally sound.

Equipment: The equipment required in the BSQT test is in no way unusual. In practice, the equipment required will depend to a large extent on what additional training the commander wishes to incorporate in the BSQT scenario. A detailed description of the equipment used in the BSQT test is provided in Appendix C.

Transportation. The normal SQT, conducted in garrison, has no significant transportation or logistics problems. Soldiers and test support personnel can usually move to the test site on foot. Some equipment may have to be moved by vehicle. The BSQT, in contrast, usually requires all personnel and equipment to move to a training area by vehicle. During the BSQT, three to five 2 1/2 ton trucks were used to move personnel and equipment to the field. These are costs of conducting the BSQT in a tactical context.

Standardization. If the BSQT concept is to be implemented, some standardization problems are likely to be encountered. Tasks like Move Over and Around Obstacles are inherently difficult to standardize mainly because of the requirement for a criterion-referenced test item that focuses on complex behavioral processes. In addition, test support materiel availability may be expected to vary. It may be that the requirements for rigorous standardization may need to be relaxed somewhat in order to implement the BSQT concept.

Major Conclusions

The Battlefield SQT:

- is feasible in concept
- is a more performance-oriented test than the normal SQT
- is not significantly more resource intensive than the normal SQT
- is perceived by the soldiers to be more difficult than the normal SQT
- was preferred by most soldiers
- is not dependent on soldiers' literacy skills
- can be easily combined with some additional training objectives

However, the Battlefield SQT:

- does require access to suitable terrain
- cannot be meaningfully carried out in garrison
- does require more transportation assets than the normal SQT
- may be difficult to standardize in some cases

Appendix A

BATTLEFIELD SQT SCENARIO

All tested soldiers were first moved with their platoon to a platoon assembly area where they camouflaged themselves and their equipment. Once this had been completed, the squad received an administrative briefing on the test site and the tactical mission. The soldiers then were moved forward, three at a time, to the lane start point.

Phase I

STATION 1. The tested soldiers left the assembly area under the control of an NCO grader. The NCO briefed the soldiers as follows: "I'm SGT _____, you have already received the patrol order and you know our mission is to conduct a patrol between the battalion trains and an adjacent rifle platoon. During the patrol, each of you will be required to be the pointman for the patrol. I don't want any talking during movement; use the appropriate visual signals during movement. Each of you will be required to demonstrate to me, five visual signals as we move. You will have 10 seconds to properly demonstrate each of the visual signals I tell you to perform. I will start with the rear soldier first; after he has been tested, he will become the pointman." The NCO then showed the group the route to follow. Once the patrol was moving, the NCO began testing the soldiers on Task #071-326-0600 (Use of Visual Signals to Control Movement).

STATION 2. The patrol then encountered a 4.2" Mortar section; one soldier was lying on the ground. The NCO told the soldiers: "I'm going to assign each of you a sector to search for the other crew members. I'll check this man lying here." The NCO then assigned each man a sector. As the soldiers moved to their position, each of them came upon a member (evaluator) of the 4.2" Mortar section, who had his protective mask on and immediately said "GAS" as the soldiers moved close to him. The evaluator graded the soldier on putting on his protective mask, clearing it and putting on his hood properly (Task #092-503-1002: Put on and Wear a Protective Mask). The evaluator told the soldier, "We were hit by a chemical blood agent round. The soldier by the gun has already died from it. I want you to administer the antidote for a blood agent to me. You have 2 minutes to administer the antidote." The evaluator then asked the soldier, "How many ampules can you give me? How much time between ampules?" The soldier administered the antidote (Task #081-831-1017). The evaluator then told the soldier, "Help me up and let's move back to your patrol leader." As the soldier started to help him, the evaluator said, "You have a droplet of something on your right hand. You better decontaminate yourself before we move; you must perform personal decontamination in 5 minutes." The soldier then

performed Task #092-503-1007 (Decontaminate Self). After this task had been completed, the soldiers returned to the location where they left the patrol leader. The patrol leader reformed the three soldiers and they continued to patrol.

STATION 3. Following some tactical movement, the NCO halted the soldiers near a danger area and gave them the following briefing: "The area ahead of us is reported to have enemy snipers covering it. It also still has some old enemy obstacles in it. These obstacles will have to be negotiated using proper movement techniques including, the low crawl, high crawl and rush. Some of the obstacles remaining in the area are concertina wire, tangle foot barbed wire, and logwalls. The area is clear of enemy mines. Each of you will have 6 minutes to move completely through the area and set up security on the other side of the road junction. I want two of you to provide flank security while the first man moves through the area. I'll provide direct cover while each of you maneuvers through the area." The NCO moved two of the soldiers to flank security positions where they waited until it was their turn to go through the area. The third soldier was instructed to move through the obstacle area. Each soldier, in turn, moved through the area. After each soldier had moved through the obstacle area, he set up security on the other side. When all the soldiers had moved through the obstacle area, the patrol continued (Task #071-326-0503: Move Over, Through, or Around Obstacles).

Phase II

As the patrol moved tactically toward the platoon position, they were met by another NCO. He told them: "I'm SGT _____, the Platoon Sergeant for the 3rd Platoon. We've suffered some casualties in this area and I need you to serve as temporary replacements until the company sends me some new men. I'll direct each of you to the positions I want you to occupy." Each soldier was led to a different position. The soldier was met at the station by an NCO who had them perform a designated task. Each soldier was rotated through all three positions.

STATION 4. As the soldier approached the position, he was met by another NCO who told the soldier the following: "I'm SGT _____, your fire team leader. I've just been told by the platoon leader that an armor threat is approaching our area from the west and could be here in a matter of minutes. I want you to go ahead and prepare your DRAGON for firing (Task #071-317-3302: Prepare a DRAGON for Firing); you have 30 seconds to accomplish this." After this had been completed, the NCO told the soldier: "I hear an armored vehicle; prepare to engage the armored vehicle from the kneeling position. You have 30 seconds to assume the correct kneeling firing position." (Task #071-317-3304: Demonstrate Correct DRAGON Firing Positions). Next, the soldier was told by the NCO: "I want you to move to the next position in front of

you and see if you would be able to engage an armored vehicle with a LAW from within that position. Here is a LAW; sling it on your shoulder. Once at the bunker, I want you to prepare the LAW for firing within 30 seconds." (Task #071-318-2201: Prepare an M72A2 LAW for Firing). After this was completed, the soldier was told to move to an adjacent position (Position 2) and was told that the platoon leader wanted to strengthen the position because of enemy probes. (If this was the soldier's last position in Phase II, he was ordered to report to the platoon command post (C.P.) with the other two soldiers.)

STATION 5. As the soldier approached the position, he was met by an NCO who told him, "I'm SGT _____, your new fire team leader. The platoon leader told me that he expects our area to be probed by enemy soldiers very shortly. The second platoon is reportedly being probed now, and the enemy is moving this way. I want you to install this Claymore in front of your location and fire it if any enemy soldiers enter your area. You will have only 5 minutes. Your aiming stake is the metal pole with the red sign in front of your position." (Task #051-192-1502: Install and Fire the Claymore Mine). Enemy soldiers appeared in front of the soldier's position which was the cue for him to fire the mine. There also was an M-60 machinegun and crew at this location. When the enemy attacked, the soldier fired the Claymore mine and the M-60 opened fire. The M-60 gunner was shot and the soldier was required to operate the M-60. The NCO told the soldier: "I want you to take over as the M-60 gunner and engage the enemy to your front. You have 20 seconds to load and fire the M-60; if a stoppage occurs, apply the correct procedure." (Task #071-312-3001: Operate an M-60 Machinegun). The enemy soldiers retreated and the NCO told the tested soldier: "I want you to clear your M-60. You have 20 seconds to accomplish this." After this task had been completed, the soldier was told to report to the platoon C.P. (Station 3) and tell the platoon leader that the 2d squad M-60 position was probed by enemy soldiers.

STATION 6. The soldier then moved to the platoon C.P. The soldier was intercepted by an NCO on the way who told the soldier: "I'm SGT _____; I heard an explosion around the platoon C.P. area, we had better check it out." Upon reaching the platoon C.P., the soldier and the NCO discovered that the C.P. group had become indirect fire casualties. The NCO examined one C.P. soldier. The NCO then told the tested soldier: "This soldier needs immediate help, I want you to administer mouth-to-mouth resuscitation and external heart massage (Task #081-831-1004: Perform Mouth-to-Mouth Resuscitation and External Heart Massage) while I check out the other soldiers." (These tasks were performed on a mannequin designed for training on the tasks.) When the soldier was finished, the NCO told the tested soldier: "The one you are working on seems to be alright; now I want you to apply proper life saving steps to this soldier (points to the second soldier on the ground). He has a non-arterial bleeding wound on the right forearm. The casualty has no other wounds and the bone is not broken. He is conscious and is not having any

trouble breathing. Remember, also treat the soldier for shock. We need to move these soldiers out of this area so you only have 3 minutes to accomplish first-aid." (Task #081-831-1006 and #081-831-1005). After these tasks had been performed, the NCO told the soldier, "I have sent for the platoon medic. I want you to follow this trail to the Company C.P. and tell the CO about the platoon C.P. being hit." The three soldiers were reassembled and moved to the Company C.P.

Phase III

Upon arrival at the company C.P., the soldiers gave the NCO the message. The NCO then told the soldiers: "I'm SGT _____, the Company Operations NCO. I'm short handed here and we're trying to get the Company C.P. completely operational. I'm going to assign each of you a task to perform." The soldiers rotated through three stations until they accomplished all seven tasks.

STATION 7. One soldier was sent to the Company C.P. Commo Chief to help set up communications. The NCO Commo Chief told the soldier: "I'm SGT _____, the Company Commo SGT, I want you to install the telephone set TA-312 and make it operational. We're expecting a message in 2 minutes, so it must be operational in 2 minutes." (Task #113-600-1001: Install Telephone Set TA-312). After this task had been completed, the commo SGT told the soldier: "We have about 5 minutes before the next message will be coming in. I want you to use this time to check out your M-16 rifle. You have 2 minutes to disassemble the weapon, then I'll check it. Then you will have 2 minutes to reassemble your weapon. Don't remove the handguards or the sling. I'll perform the functional checks for you after you have reassembled the weapon." (Task #071-311-2001: Perform Operator Maintenance on the M-16 Rifle). Once this task had been accomplished, the soldier was told to rotate to the next station. If the soldier had completed all three stations, he was sent to the end point administrative area.

STATION 8. The operations SGT told the soldier, "I want you to locate the platoon C.P. on the map so I can call the coordinates into the Battalion C.P. The platoon C.P. is already marked on the map board. I want you to give me the six-digit grid coordinate to the platoon C.P. in two minutes." (Task #071-329-1002: Determine the Grid Coordinate of a Point on a Map). Next, the operations SGT told the soldier: "I also need the magnetic azimuth from the Company C.P. to the Platoon C.P. before I call in the location of the Platoon C.P. to the Battalion. I want you to take that coordinate scale and protractor and tell me the magnetic azimuth to the platoon C.P. in 4 minutes." (Task # 071-329-1010: Determine Azimuth Using Coordinate Scale and Protractor). After the soldier accomplished this task, the operations SGT told the soldier: "The Battalion C.P. is located in that direction towards that tree. I want you to use your compass and shoot an azimuth to that tree and tell

me what it is. The Battalion C.P. will also need our direction to them when I call in my report to them. You have one minute to shoot your azimuth." (Task #071-329-1003: Determine a Magnetic Azimuth Using a Compass). When the soldier accomplished this task, he rotated to the next station.

STATION 9. The operations SGT told the soldier: "I need you to help clear an old enemy mine field and reestablish our own friendly minefield. I'm going to assign you to SGT _____ and I want you to help him." The soldier was turned over to SGT _____ who took him to a nearby enemy minefield. SGT _____ then told the soldier, "I want you to take this section and probe for enemy mines, locate them and mark them. You only have 4 minutes to clear this section." (Task # 051-192-1022: Locate Mines by Probing). Next, the NCO told the soldier: "Now that this section has been cleared, we need to install our own M-21 Metallic Anti-tank Mines in this section. I want you to take this M-21 mine and install it; be sure to use the M-26 arming wrench. Also, I don't want you to worry about camouflaging the mine or extension rod. You have 4 minutes to install and arm the mine." (Task # 051-192-1008: Install and Arm the M-21 Metallic Anti-Tank Mine). Once this task had been completed, the soldier rotated to the next station.

After the soldiers had rotated through these final three stations, they were moved to an administration holding area where their scorecards were collected and administered the Battlefield SQT questionnaire.

Appendix B

Personnel Requirements: Listed below is a comparison of personnel requirements between Battlefield Skill Qualification Testing and the normal Skill Qualification Hands-On Testing. Note that all scorers evaluated more than one task in the BSQT (see Appendix A).

1. Visual Signals # 071-326-0600
 - A. BSQT
 1. two scorers, E-6 or above, CMF 11 Mos.
 - B. Normal SQT
 1. one scorer, E-6 or above, CMF 11 Mos.
 2. one alternate scorer, E-6 or above
2. Protective Mask # 092-503-1002
 - A. BSQT
 1. three scorers, E-6, CMF 11 Mos.
 2. one assistant scorer, E-4 or below
 - B. Normal SQT
 1. one scorer, E-6 or above, CMF 11 Mos.
 2. one alternate scorer, E-6 or above, CMF 11 Mos.
3. Administer Blood Agent Antidote # 081-831-1017
 - A. Deleted from this year's SQT test.
4. Decontaminate Self # 092-503-1007
 - A. BSQT
 1. Same personnel graded this task as in Task # 2, Protective Mask.
 - B. Normal SQT
 1. one scorer, E-6 or above, CMF 11 Mos.
 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 3. one assistant scorer, E-5, SMF 11 Mos.

5. Move Over, Through, or Around Obstacles # 071-326-0503
 - A. BSQT
 1. one scorer, E-6, CMF 11 Mos.
 - B. Normal SQT
 1. N/A - This was SC task for 1981 SQT.
6. Operate an M-60 Machinegun # 071-312-3001
 - A. BSQT
 1. Same personnel graded this task that graded task # 051-192-1502, Claymore Mine
 - B. Normal SQT
 1. one scorer, E-6 or above, CMF 11 Mos.
 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 3. one assistant scorer, E-4 or below
7. Prepare DRAGON for Firing # 071-317-3302
 - A. BSQT
 1. Same personnel graded this task that graded task # 071-318-2201, Prepare LAW for Firing.
 - B. Normal SQT
 1. one scorer, E-6 or above, CMF 11 Mos.
 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 3. one assistant scorer, E-4 or below
8. Demonstrate Correct DRAGON Firing Position # 071-317-3304
 - A. BSQT
 1. Same personnel graded this task that graded task #s 071-318-2201 and 071-317-3302, Prepare LAW for Firing and Prepare DRAGON for Firing.
 - B. Normal SQT
 1. Same personnel graded this task that graded task # 071-317-3302, Prepare DRAGON for Firing.
9. Prepare the LAW for Firing # 071-318-2201
 - A. BSQT
 1. one scorer, E-6s, CMF 11 Mos.
 2. one assistant scorer, E-4

- B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. one assistant scorer, E-4
- 10. First Aid # 081-831-1005 and # 081-831-1006
 - A. BSQT
 - 1. one scorer, E-6, CMF 11 Mos.
 - 2. one alternate scorer, E-5, CMF 11 Mos.
 - 3. one assistant scorer, E-4
 - B. Normal SQT
 - 1. three scorers, E-6 or above, CMF 11 Mos.
 - 2. three alternate scorers, E-6 or above, CMF 11 Mos.
 - 3. three assistant scorers, E-4 or below
- 11. Mouth-to-Mouth Resuscitation and External Heart Massage # 081-831-1004
 - A. BSQT
 - 1. Same personnel graded this task that graded task # 081-831-1005, Stop the Bleeding and Treat the Shock.
 - B. Normal SQT
 - 1. N/A - This was SC task for 1981 SQT.
- 12. Install and Fire the Claymore Mine # 051-192-1502
 - A. BSQT
 - 1. one scorer, E-6, CMF 11 Mos.
 - 2. one assistant scorer, E-4
 - B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above
 - 3. five assistant scorers
- 13. Field Telephone # 113-600-1001
 - A. BSQT
 - 1. one scorer, E-6, CMF 11 Mos.

- B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. two assistant scorers, E-4 or below
- 14. Operator Maintenance of M-16 Rifle # 071-311-2001
 - A. BSQT
 - 1. one scorer, E-6, CMF 11 Mos.
 - B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. one assistant scorer, E-4 or below
- 15. Locate Mines by Probing # 051-192-1022
 - A. BSQT
 - 1. one scorer, E-5, CMF 11 Mos.
 - B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. one assistant scorer, E-4 or below
- 16. Install the M-21 Anti-Tank Mine # 051-192-1008
 - A. BSQT
 - 1. Same personnel graded this task that graded task # 051-192-1022, Locate Mines by Probing
 - B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. one assistant scorer, E-4 or below.
- 17. Determine Grid Coordinates of a Point on a Map Using Grid System # 071-329-1002
 - A. BSQT
 - 1. Same personnel graded this task that graded task # 071-329-1003, Determine a Magnetic Azimuth.

- B. Normal SQT
 - 1. N/A - This was SC task for 1981 SQT.

- 18. Determine Magnetic Azimuth # 071-329-1003
 - A. BSQT
 - 1. one scorer, E-6, CMF 11 Mos.
 - B. Normal SQT
 - 1. one scorer, E-6 or above, CMF 11 Mos.
 - 2. one alternate scorer, E-6 or above, CMF 11 Mos.
 - 3. one assistant scorer, E-5, CMF 11 Mos.

- 19. Determine Azimuth Using Coordinate Scale and Protractor # 071-329-1010
 - A. BSQT
 - 1. Same personnel graded this task that graded tasks # 071-329-1003 and # 071-329-1002, Determine Magnetic Azimuth and Determine Location on Map by Using Grid System.
 - B. Normal SQT
 - 1. N/A - This was SC task for 1981 SQT.

- 20. Nerve Agent Antidote # 081-831-1012
 - A. Cancelled from this year's SQT test.

The following is a summation of all personnel utilized in the Battlefield SQT scenarios and the normal SQT test.

| | Battlefield SQT | Normal SQT |
|-----------------------------|-----------------|------------|
| A. Officers | 1 | 1 |
| B. E-6 or above | 12 | 30 |
| C. E-5 | 2 | 2 |
| D. E-4 or below | 4 | 16 |
| E. Administrative Personnel | 4 | 8 |

Note: These figures do not list the number of personnel required to prepare and test the normal SQT written Skill Component test. However, the 1981 written Skill Component tasks were incorporated in the Battlefield SQT test and the above list includes the personnel utilized in grading those BSQT tasks.

To accurately see the difference in effective utilization of personnel, several things must be considered: first, the normal SQT test site could test about 120 personnel, on all fourteen SQT hands-on tasks, in an eight-hour period. The Battlefield SQT test site could test only 60 personnel, on all nineteen SQT hands-on and written tasks, in a nine-hour period. The difference shows that on the comparison scale about the same amount of people are being utilized on both tests to produce the same end numbers of tested soldiers. However, the comparison does show that fewer E-6s and above and fewer E-4s and below will be used in the Battlefield SQT test. Secondly, the comparison chart does not reflect the 15 personnel utilized in the preparation, testing and grading of the normal SQT written test.

Appendix C

Equipment Requirements: The following is a list of equipment required to set up and operate this particular Battlefield SQT site. Also listed is a comparison list of equipment need to operate the normal SQT hands-on site.

1. Visual Signals # 071-326-0600
 - A. Battlefield SQT
 1. one wristwatch with second hand
 2. one clipboard and ball-point pen
 - B. Normal SQT
 1. one stopwatch
 2. one clipboard and ball-point pen
2. Protective Mask # 092-503-1002
 - A. Battlefield SQT
 1. one wristwatch with second hand
 2. one ball-point pen
 - B. Normal SQT
 1. one stopwatch
 2. one clipboard and ball-point pen
3. Administer Blood Agent Antidote # 081-831-1017
 - A. Deleted from 1981 SQT test.
4. Decontaminate Self # 092-503-1007
 - A. Battlefield SQT
 1. three M-13 decontamination kits
 2. one refill kit, skin decontamination, M58 for each examinee
 3. one wristwatch with second hand
 4. one trash bag
 5. one ball-point pen
 - B. Normal SQT
 1. one M-13 decontamination kit
 2. two M-58, skin decontamination kits

3. one refill kit, M-58 for each examinee
 4. a thick solution to simulate unknown chemical liquid
 5. one medicine dropper to apply solution
 6. one trash can
 7. one stopwatch
 8. one clipboard and ball-point pen
5. Move Over, Through, or Around Obstacles # 071-326-0503
- A. Battlefield SQT
 1. six rolls of concertina wire
 2. one hundred sandbags
 3. two rolls of barbed wire
 4. material to construct log wall
 5. one stopwatch
 6. one OPFOR sniper
 7. 300 rounds of 5.56 blank ammunition
 - B. Normal SQT
 1. N/A - written Skill Component item for 1981 SQT.
6. Operate an M-60 Machinegun # 071-312-3001
- A. Battlefield SQT
 1. one M-60 machinegun with blank adapters
 2. five rounds of M-60 blank ammo with one dummy round per examinee
 3. M-16 blank ammunition and grenade simulator for aggressors
 4. one wristwatch with second hand (same as in Task # 12)
 5. one clipboard and ball-point pen
 - B. Normal SQT
 1. two M-60 machineguns
 2. four belts of five rounds of linked dummy M-60 machinegun ammunition
 3. one E-type silhouette
 4. one clipboard and ball-point pen
 5. one stopwatch

7. Prepare the DRAGON for Firing # 071-317-3302
 - A. Battlefield SQT
 1. one DRAGON launcher with tracker
 2. one wristwatch
 3. one clipboard and ball-point pen
 - B. Normal SQT
 1. four DRAGON launchers with trackers
 2. one stopwatch
 3. one clipboard and ball-point pen

8. Demonstrate Correct DRAGON Firing Position # 071-317-3304
 - A. Battlefield SQT
 1. one DRAGON launcher with tracker
 2. one wristwatch
 3. one clipboard and ball-point pen
 - B. Normal SQT
 1. four DRAGON launchers with trackers
 2. one stopwatch
 3. one clipboard and ball-point pen
 4. one target

9. Prepare the LAW for Firing # 071-318-2201
 - A. Battlefield SQT
 1. two expended M72A2 LAW launchers
 2. one wristwatch with second hand
 3. one ball-point pen
 - B. Normal SQT
 1. six expended M72A2 LAW launchers
 2. one stopwatch
 3. one clipboard and ball-point pen
 4. one target

10. Stop the Bleeding/Treat for Shock # 081-831-1005 and # 081-831-1006

A. Battlefield SQT

1. one war-wound moulage set
2. one unopened field first aid dressing for each examinee
3. one trash bag
4. one wristwatch with second hand
5. one grenade simulator for each examinee
6. one stopwatch
7. one clipboard and ball-point pen

B. Normal SQT

1. one set of LBE with steel helmet
2. one war moulage set
3. one unopened field first aid dressing for each 25 examinees to be tested
4. one trash barrel
5. ten blousing garters
6. one stopwatch
7. one clipboard and ball-point pen

11. Perform Mouth-to-Mouth Resuscitation and External Heart Massage
081-831-1004

A. Battlefield SQT

1. one resuscitation training mannequin
2. one box sterile wipes
3. one bottle disinfectant
4. one clipboard and ball-point pen

B. Normal SQT

1. N/A - written Skill Component item for 1981 SQT.

12. Install and Fire Claymore Mine # 051-192-1502

A. Battlefield SQT

1. one M18A1 Claymore Mine (Inert) complete
2. two sandbags
3. one metal post (target)
4. one wristwatch with second hand
5. one ball-point pen

B. Normal SQT

1. two M18A1 Claymore mines complete (Inert)
2. seven wooden stakes approximately 75 centimeters long
3. one stopwatch
4. one clipboard and ball-point pen
5. four sandbags
6. material to construct cover for each position
7. material to construct screens between positions

13. Install TA-312 # 113-600-1001

A. Battlefield SQT

1. one TA-312 telephone
2. one wristwatch with second hand
3. one ball-point pen
4. four BS-30 batteries
5. WD-1 field wire, 30 feet
6. one pair lineman's pliers
7. one field table

B. Normal SQT

1. six TA-312 telephones
2. one stopwatch
3. one clipboard and ball-point pen
4. twelve BA-30 batteries
5. WD-1 field wire, 25 feet per telephone
6. six lineman's pliers
7. six field tables

14. Operator's Maintenance on M-16 Rifle # 071-311-2001

A. Battlefield SQT

1. each soldier had his own M-16 rifle with magazine
2. one field table (same equipment used in Task # 13)
3. one wristwatch with second hand (same equipment used in Task # 13)
4. one clipboard and ball-point pen

B. Normal SQT

1. six M-16A1 rifles
2. six dummy rounds
3. six magazines
4. six field tables
5. one stopwatch
6. one clipboard and ball-point pen

15. Locate Mines by Probing # 051-192-1022

A. Battlefield SQT

1. one anti-tank mine
2. two probes--one metallic, one wood
3. one mine location marker
4. one wristwatch with second hand
5. one clipboard and ball-point pen

B. Normal SQT

1. two anti-tank mines
2. two probes--nonmetallic
3. engineer tape--10 meters
4. two mine location markers
5. one rake
6. one clipboard and ball-point pen
7. one stopwatch
8. material to construct screens between probe areas

16. Install the M21 Anti-Tank Mine # 051-192-1008

A. Battlefield SQT

1. one M21 anti-tank mine with working parts
2. one M26 arming wrench
3. one wristwatch with second hand (same as in Task # 15)
4. one clipboard and ball-point pen

- B. Normal SQT
 - 1. two M21 anti-tank mines with working parts
 - 2. two M26 arming wrenches
 - 3. one stopwatch
 - 4. one clipboard and ball-point pen
 - 5. material for making a partition between test position
- 17. Determine Location by Grid Coordinates # 071-329-1002
 - A. Battlefield SQT
 - 1. two maps of training area
 - 2. two coordinate scales and protractor
 - 3. one field table
 - 4. one wristwatch with second hand
 - 5. one ball-point pen
 - B. Normal SQT
 - 1. N/A - written Skill Component item for 1981 SQT.
- 18. Determine Magnetic Azimuth # 071-329-1003
 - A. Battlefield SQT
 - 1. one lensatic compass
 - 2. one wristwatch with second hand (same as in Task # 17)
 - 3. one ball-point pen
 - 4. one field table. (same as in Task # 17)
 - B. Normal SQT
 - 1. three lensatic compasses
 - 2. three M-2 compasses
 - 3. stopwatch
 - 4. one clipboard and ball-point pen
 - 5. material for marking target points
 - 6. material for marking test position circle
 - 7. one field table

19. Determine Azimuth Using Coordinate Scale and Protractor # 071-329-1010

A. Battlefield SQT

1. two maps of training area (same as in Task # 17)
2. two coordinate scales and protractor (same as in Task # 17)
3. grease pencils
4. one wristwatch with second hand (same as in Task # 17)
5. one field table (same as in Task # 17)
6. one clipboard and ball-point pen

B. Normal SQT

1. N/A - written Skill Component item for 1981 SQT.

20. Administer Nerve Agent Antidote # 081-831-1012

A. Cancelled from this year's SQT test.

Training Areas

a. The site where the normal SQT hands-on test was administered was a large open field. Its measurements were approximately 200 meters x 200 meters.

b. The site where the normal SQT written test was administered was a large classroom. This test was administered to examinees two or three days after they had completed the Hands-On Component test.

c. The site where the Battlefield SQT test was administered was a tactical field training area. The area selected was about the size of a squad size training area (1500 meters x 500 meters). The area was flat with moderately heavy vegetation. This area afforded excellent cover and concealment and the seclusion provided isolation for the various BSQT test stations and added to the tactical realism of the test. Soldiers were evaluated on both hands-on tasks and converted written Skill Component items in a tactical environment.

Soldiers that were evaluated under the Battlefield SQT were required to wear or carry the following equipment:

1. Fatigues
2. Black leather boots
3. Steel helmet with camouflage cover
4. Weapon with blank adapter and magazine
5. Protective mask and M-258 kit

- 6. LBE- pistol belt, suspenders, canteen (right side), E-tool (left side), 2-ammo pouches, first aid packet, poncho rolled on, back of pistol belt

This uniform and equipment list differs from the normal SQT requirements mainly by added requirement to carry individual weapon.